Space Weather Forecast

Issued on Friday 28 February 2025 at 12:36 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares. Decreasing risk of G1/Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with occasional Common-class flares. There are now seven sunspot regions on the visible disc, with two regions fading, and another in the northwest no longer visible on the limb. A region in the southwest is rotating off the west limb, and because it can no longer be fully seen, it can't be assessed for any changes. A further region near north centre disc has been fading recently, losing area and simplifying. In the northeast, a new region has grown fairly rapidly and will be one to watch. The remaining spots are small and simple at present.

No Earth directed Coronal Mass Ejections (CMEs) have been seen in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind showed an increasing coronal hole fast wind. Wind speeds were elevated, around 550 km/s, gradually increasing to strong near 750 km/s. Interplanetary Magnetic Field was moderate, with the north-south component also varying moderately. Geomagnetic activity was Unsettled to Active (Kp 3-4) with a couple of G1/Minor geomagnetic storm (Kp 5) intervals after 28/0000 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was slightly above background levels, but well below the S1/Minor Radiation Storm level, on a declining trend.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Moderate, with a chance of isolated Moderate flares. As the larger region in the southwest rotates well beyond the west limb over the next 24 hours or so, the risk of flaring reduces.

Solar Wind / Geomagnetic Activity: Glancing CME influence is possible but unlikely, with the main risk late Day 1 into Day 2 (28 Feb-01 Mar). Solar winds at Earth are currently strong, due to a coronal hole fast wind. During Days 3-4 (02-03 Mar), the solar wind is likely to decline to slightly elevated levels.

Unsettled to Active (Kp 3-4) geomagnetic activity is expected until Day 4, potentially with isolated G1-G2/Minor to Moderate geomagnetic storms (Kp 5-6), this most likely on Day 1 but with a

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declining risk through Days 2 and 3. By Day 4, geomagnetic activity is expected to decline to predominantly Quiet to Unsettled (Kp 2-3) levels.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is likely to be at background levels. There remains a slight but declining chance of further enhancements, should any larger flares occur from the region near the southwest limb.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	Yes	60	40	20	5
Strong	**G3**	No	5	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	50	40	30	30
Very Active	**R3-R5 (X Class)**	No	5	5	1	1

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	10	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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